

Application No.: 09/492,696
Amendment Under 37 C.F.R. §1.111 dated April 30, 2004
Reply to the Office Action of December 31, 2003

REMARKS

Claims 1 - 20 remain pending. The rejections set forth in the Office Action are respectfully traversed below.

Claim Objection

The typographical errors in claim 20 were corrected above, as requested in the Office Action.

Rejections under 35 U.S.C. § 102

Claims 1-20 were rejected under 35 U.S.C. §102 over **Davis** (USP 6,181,803). However, it is submitted that nothing in the cited prior art teaches or suggests all the features cited in the presently claimed invention.

The present invention is concerned with the biometric authentication technology and one of the objectives of the present invention is to provide a biometric authentication apparatus (or method), which is usable, in particular, for assessing such a wide variety of individuals including individuals whose biometric characteristic of concern is poorly reproducible.

To achieve this objective, the present invention apparatus comprises:

- a biometric information input unit,
- an extraction unit,
- an estimation unit,
- a request unit,
- an authentication information input unit,

a biometric feature information registration unit,
an authentication information registration unit,
a biometric feature information matching check unit,
an authentication information matching check unit, and
a determination unit.

The biometric information input unit inputs biometric information, the extraction unit extracts biometric feature information, the estimation unit estimates matching precision of the extracted biometric feature information, the request unit requests an input of additional authentication information such as a password after estimating as the predetermined matching precision cannot be obtained, the authentication information input unit inputs the authentication information.

The biometric feature information registration unit preliminarily stores registered biometric feature authentication information, the authentication information registration unit preliminarily stores additional registered authentication information, the biometric feature information matching unit conducts a matching check between the extracted biometric feature information and the registered biometric feature information, the authentication information matching check unit conducts a matching check between the input authentication information and the registered authentication information, and the determination unit computes matching precision by combining the matching check result about the biometric feature information with the matching check result about the additional authentication information and determines based on the computation result whether or not to authenticate an assessed individual.

As apparent from the above review of the present invention, authentication processes according to the present invention include one for estimating reliability (precision) of the matching to be conducted later with respect to the biometric feature information so that an individual whose reproducibility of the biometric feature information is poor may also have himself/herself assessed for the authentication by way of inputting an additional type of authentication information.

Davis does not teach or suggest “requesting an input of additional authentication information such as a password after estimating as predetermined matching precision cannot be obtained” nor “determining whether or not to authenticate an assessed individual based on both the biometric feature information and the additional authentication information.”

The independent claims of the present invention recite a “determination unit” or a “generation unit” (and corresponding method step) that takes advantage of the *combination* of matching check data related to *both* biometric feature information, as well as, *additional* authentication information. Such features are not at all addressed in the cited prior art.

With regard to such features, the Office Action merely referred to the processor unit 220 shown in Figure 2 of **Davis** “that is a determination unit for computing matching precision.” The Office Action does not all address the *combination* of the matching check results regarding biometric feature information, and matching check results regarding *additional* authentication information, in authenticating the user.

The Office Action made reference to both visual physical characteristics (e.g., iris patterns, retina patterns, fingerprints, facial geometries, etc), as well as, non-visual characteristics of the user (e.g., voice patterns, data entry patterns, etc.), referring to column 4, lines 46-52 of

Davis. Although the Office Action appears to be broadly interpreting “biometric feature information” and “additional authentication information” to read on these visual and non-visual characteristics, nothing in **Davis** discloses the authentication of the user based on the *combination* of two different parameters. In another words, **Davis** only appears to make its authentication determination based on a *single* biometric characteristic, whether it is visual or non-visual (see e.g., column 6, line 47 to column 7, line 8). **Davis** does not disclose using any *combination* of matching check results as recited in the present claimed invention. Indeed, **Davis** does not even describe *requesting* input of *additional* authentication information *after* the biometric information is provided, much less any determinations based on a combination therewith.

As for the present claimed “request unit,” **Davis** does not disclose requesting any additional authentication information after the biometric information is inputted, as mentioned above. More fundamentally, **Davis** does not disclose requesting such additional authentication information *after estimating* that predetermined matching precision *cannot* be obtained from the initially inputted biometric information. Basically, the prior art does not teach or suggest the present claimed “estimation unit” that estimates matching precision of the extracted biometric feature information.

For this claimed feature, the Office Action referred to column 3, lines 65-67, and column 5, lines 22-26 of **Davis**. The processing referred to in the Office Action that is disclosed in **Davis** pertain to locally tailoring the “data clip” related to the biometric data, before analyzing the data for authentication. In other words, the biometric data clip may be enhanced by computationally extrapolating information from multiple samples, and the data clip may be

Application No.: 09/492,696
Amendment Under 37 C.F.R. §1.111 dated April 30, 2004
Reply to the Office Action of December 31, 2003

"cropped" to exclude unnecessary data etc. (column 5, lines 4-21 and column 6, lines 58-67). Such custom tailoring of the biometric data clip according to **Davis** does not correspond to any "estimation" of the matching precision for the extracted biometric feature information, as recited in the presently claimed invention. As described in the present specification, for example, the claimed estimation estimates the matching precision from the quality of the biometric feature information (see e.g., page 41, lines 4-6). The prior art does not teach or suggest these features.

For at least these reasons, the present claimed invention patentably distinguishes over the cited prior art. If, for any reason, it is felt that this application is not now in condition for allowance, or if the Examiner wishes additional explanations of the present invention, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that any fees are due in connection with the filing of this paper, please charge any fees to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



John P. Kong
Attorney for Applicant
Reg. No. 40, 054

JPK:kal
1250 Connecticut Avenue, N.W.
Suite 700
Washington, D.C. 20036
(202) 822-1100

Q:\2000\000043\Filings\1.111 Amendment - April 2004.doc